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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,691	06/30/2003	Jonathan Scott Darling	990892-29	7684

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EXAMINER	
BOWERS, NATHAN ANDREW	
ART UNIT	**PAPER NUMBER**
1744	

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/607,691	DARLING ET AL.	
	Examiner	Art Unit	
	Nathan A. Bowers	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18-20 and 22-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14-16,18-20 and 22-25* is/are allowed.

6)☒ Claim(s) *1-7 and 12* is/are rejected.

7)☒ Claim(s) *8-11 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1) Claims 1-7, 12, 14-16, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5162129) in view of Sermanni (US 6958110), Davenport (US 6045070), and Peters (US 5352469).

With respect to claims 1 and 2, Anderson discloses an apparatus for natural recycling of protein waste comprising a means (Figure 1:20) for mixing an enzymatic digest medium. In column 6, line 65 to column 7, line 33 and column 8, line 48 to column 9, line 34, Anderson discloses the use of digesters (Figure 1:46, 48, 52) with rotatable paddles (Figure 1:54) to mix a protein waste with an enzymatic solution. Anderson discloses a grinding assembly (Figure 1:10) in column 6, lines 35-64. Column 11, lines 50-59 state that that the grinder accepts protein wastes (Figure 1:12) as well as the enzymatic digest medium that is recycled to the grinder from the output of the digester/mixing reactors. Column 12, line 58 to column 13, line 44 state that the protein solubles mixture is mixed with a stream of oil, and moved to a series of evaporators where the protein/oil solution is emulsified and digested using rotatable blades (Figure 1:81). The evaporators serve as a drying system, and the rotatable blades act as mixing devices. Anderson, however, does not expressly disclose the use of a means for adjusting the pH level in the enzymatic digester. Anderson does not disclose that the grinding assembly is mounted on a movable platform, or that the drying system includes an extruder.

Sermanni discloses an apparatus for enzymatically digesting agricultural materials that comprises a reaction chamber (Figure 1:5). Column 3, line 65 to column 4, line 30 and column 5, lines 29-62 teach that the pH of the reaction solution is maintained using appropriate pH corrective solutions. Column 6, lines 48-53 specifically disclose the use of pH probes/sensors.

Davenport discloses an apparatus for processing animal remains (column 2, lines 31-36 and column 20, lines 9-12) that comprises a receiving tank (Figure 1:16) and a grinder (Figure 1:12). Column 11, lines 17-30, column 13, lines 5-6, and column 21, lines 32-35 state that the grinder can be built as a mobile system so that granulation can be done at any site.

Peters discloses an apparatus for recycling food product wastes. An extruder (Figure 8:80) is used following a drying procedure to produce reformed feed ingredients. This is disclosed in column 2, lines 58-63 and column 7, line 50 to column 8, line 14.

Anderson, Sermanni, Davenport and Peters are analogous art because they are from the same field of endeavor regarding agricultural waste treatment processes.

At the time of the invention, it would have been obvious to ensure that the pH within the enzymatic digester disclosed by Anderson is monitored throughout the process. Sermanni indicates that pH probes are well known in the art, and are useful in determining when it is necessary to adjust the pH of the solution using an appropriate corrective buffer. Since it is known that enzymes demonstrate optimum activity at certain pH levels, it would have been obvious to ensure that the enzymatic digester is continuously operated under these conditions.

At the time of the invention, it additionally would have been obvious to mount Anderson's grinder on a movable platform. Davenport teaches that this would have been beneficial because it would have allowed the protein waste recycling apparatus to easily travel between a various locations. This minimizes the costs associated with handling and transporting the protein waste products.

At the time of the invention, it also would have been obvious to provide Anderson's device with an extruder at the drying stage. Peters indicates that extruders are known in the art

as a means by which to create a product in a desired shape and form. In column 5, line 44 to column 6, line 11, Anderson states that it important to convert the finished protein product into a pellet or cake. An extruder would be able to accomplish this in an effective manner.

With respect to claims 3 and 4, Anderson, Sermanni, Davenport and Peters disclose the apparatus in claim 3. Anderson does not expressly disclose the use of an inductor nozzle and a centrifugal pump, it is believed that these structural limitations are commonly used in the art. This is evidenced by the Josse (US 6692642) and Perkins (US 6946080) references, which both disclose the use of centrifugal pumps. At the time of the invention, it would have been obvious to utilize centrifugal pumps in the apparatus of Anderson instead of the disclosed generic pumping means. Centrifugal pumps are functionally equivalent to other pumping mechanisms. Since centrifugal pumps and other types of pumps are used to accomplish the same goal (the transportation of fluids between various locations in a controlled manner), it would have been obvious to substitute centrifugal pumps for the generic pumps disclosed in Anderson's system. See MPEP 2144.06.

It would have additionally been obvious to ensure that the enzymatic digest mixing assembly includes a recirculation assembly. The use of pipes and nozzles to recirculate a solution can be found in Dvorak (US 20020197665) and Chervan (US 4443540).

With respect to claims 5-7, Anderson, Sermanni, Davenport and Peters disclose the apparatuses in claims 1 and 14. As previously described, Sermanni teaches the use of a pH probe internal to a mixing tank and a pH monitor associated with the probe. Sermanni

additionally teaches that pH adjusting solutions are added to the mixing tank in response to the readings taken by the probe. Although not expressly stated, the disclosed pH adjusting solutions could intrinsically be acids, and, more specifically, phosphoric and/or lactic acids. Phosphoric acids are well known in the art as buffering agents as evidenced by Freeman (US 4473589), and lactic acids are well known in the art as buffering agents as evidenced by Erickson (US 4041182). Furthermore, the monitor of Anderson intrinsically could be used to compare the recorded pH level in the tank to an optimal pH level. The use of pumps to control the flow of pH adjusting solutions to a tank is well known in the art.

With respect to claim 12, Anderson, Sermanni, Davenport and Peters disclose the apparatus in claim 1 wherein an extruder and a dryer are provided in series. Although Anderson, Sermanni, Davenport and Peters do not expressly disclose that the extruder and the drying apparatus are connected by an oscillating belt, it is well known in the art that oscillating belts are useful as means to link extruders to drying apparatuses. This is evidenced by Wenger (US 4099455), Jackman (US 3910775) and Buffa (US 3861293). Oscillating belts and other types of conveyor belts are considered to be functionally equivalent devices that serve identical purposes pertaining to the transportation of materials. See MPEP 2144.06. At the time of the invention, it would have been obvious to connect the disclosed extruder and the disclosed drying apparatus with an oscillating belt in order to further automate the process and thereby increase efficiency. The use of an oscillating belt would have increased the ease with which compounds are transported between the drying apparatus and the extruder.

Allowable Subject Matter

Claims 8-11 and 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 14-16, 18-20 and 22-25 are allowed.

Please see the reasons for allowance cited in the previous Office Action.

Response to Arguments

In response to Applicant's amendments, the previously made rejections under 35 U.S.C. 112 in the prior Office Action (6/9/06) have been withdrawn.

Applicant's arguments filed 11 September 2006 have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) Examiner has failed to identify the element of "means for mixing an enzymatic digest medium" as required by claim 1(a). What Examiner has identified as the means for mixing an enzymatic digest medium is described in Anderson as the protein hydrolysis stage. Anderson describes this stage and the related apparatuses as digesters, not as means for mixing.

In response to Applicant's arguments, please consider the following comments.

The disclosed heat exchange device (Figure 1:28) and digesters (Figure 1:46, 48, 52) are considered to be enzymatic digest mixing assemblies. This is due to the fact that an enzymatic medium (Figure 1:34) is mixed in the heat exchange device and the digesters with ground protein

waste from the grinder (Figure 1:10). Mixing of enzymes, as well as digestion, occurs in the digesters. Therefore, Anderson does disclose a digest mixing assembly for mixing an enzymatic medium with ground protein waste materials.

(b) Applicant further contends that with respect to claim 1, it appears that the Examiner has pieced together prior art references using claim 1 as a guide.

In response to Applicant's arguments, please consider the following comments.

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In this case, there is clear motivation to combine the Sermanni, Davenport and Peters references with Anderson to arrive at the device of claim 1. As previously set forth in the rejection above, it would have been obvious to utilize pH probes in the enzymatic digest mixing assembly in order to determine when it is necessary to adjust the pH of the solution using an appropriate corrective buffer. It would have been obvious to position the grinder on a movable platform to allow the protein waste recycling apparatus greater mobility in traveling between a various locations. It would have been utilize an extruder since extruders are known in the art as a means by which to create a product in a desired shape and form.

(c) Anderson clearly teaches away from the use of pH adjusting ingredients. Because Anderson explicitly denounces the use of pH-adjusting ingredients, it is therefore believed that it is not obvious to combine Anderson with Sermanni.

In response to Applicant's arguments, please consider the following comments.

It is agreed that Anderson states that buffers are not required during enzymatic digest mixing. Hughes teaches that this is because "the natural pH of the suspension is sufficient, generally within the range of 6 to 6.5" (see column 7, lines 45-50). This is the only fact given by Hughes that discourages the addition of pH-adjusting ingredients. Accordingly, Hughes does not teach that the use of buffers produces deleterious results, but rather simply indicates that many times their use is unnecessary. In fact, the argument against adding buffers is centered around the assumption (regardless of however likely) that an adequate pH is already present in the mixture. When it is determined that the pH of the digest is not within the appropriate range, it would have been obvious to add buffers to rectify the problem. Buffers would be useful in many processes that incorporate a variety of protein waste sources, since pH can vary considerably between biological wastes.

(d) Examiner fails to provide evidence of a motivation to utilize a centrifugal pump in Anderson's invention.

In response to Applicant's arguments, please consider the following comments.

As noted in the rejection above, Anderson discloses the use of pumps, but not specifically the use of centrifugal pumps. Centrifugal pumps are considered to be functionally equivalent to other types of pumps with regard to fluid transportation. Since centrifugal pumps and other

types of pumps are used to accomplish the same goal (the transportation of fluids between various locations in a controlled manner), it would have been obvious to substitute centrifugal pumps for the generic pumps disclosed in Anderson's system. See MPEP 2144.06

(d) Examiner fails to provide disclosure or motivation for the specific use of lactic acid or phosphoric acid for use in adjusting the pH of solutions.

In response to Applicant's arguments, please consider the following comments.

The Freeman (US 4473589) and Erickson (US 4041182) references have been cited in the rejection above to offer credence to the previous assertion that the use of lactic acids and phosphoric acids are known in the art as pH adjusting compounds.

(e) Examiner provides no reference to show that oscillating belts are useful as means to link extruders to drying apparatuses.

In response to Applicant's arguments, please consider the following comments.

The Wenger (US 4099455), Jackman (US 3910775) and Buffa (US 3861293) references have been cited to show that it is known in the art to connect extruders and drying apparatuses with a automated belt system. Oscillating belts and other types of conveyor belts are considered to be functionally equivalent devices that serve identical purposes pertaining to the transportation of materials. See MPEP 2144.06. At the time of the invention, it would have been obvious to connect the disclosed extruder and the disclosed drying apparatus with an oscillating belt in order to further automate the process and thereby increase efficiency. The use of an oscillating belt

would have increased the ease with which compounds are transported between the drying apparatus and the extruder.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan A. Bowers whose telephone number is (571) 272-8613. The examiner can normally be reached on Monday-Friday 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NAB

GLADYS JP CORCORAN
SUPERVISORY PATENT EXAMINER